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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Toshio Suzuki

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EXAMINER

WILSON, MICHAEL H

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

08/21/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/565,133	Applicant(s) SUZUKI ET AL.	
	Examiner MICHAEL WILSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060118</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 7 and 9 are objected to because the claims are in an improper Markush group format. A Markush-type claim recites alternatives in a format such as “wherein R is a material selected from the group consisting of A, B, C and D” or “wherein R is A, B, C or D.” See Ex parte Markush, 1925 C.D. 126 (Comm’r Pat.1925). See MPEP 2173.05(h). Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, the % mole ranges conflict, rendering the claim indefinite. Units of instant formula (I) may comprise up to 99 mole % of the polymer, however units of instant formula (II) must comprise at least 5 mole % of the polymer. It is unclear how the total polymer may be more than 100 mole %.

Claims 10 and 11 recite the limitation "a carbazolyl-functional polysiloxane" in line 2. There is insufficient antecedent basis for this limitation in the claim. A suggested

Art Unit: 1794

correction is to change "a" to --the--, each claim would then read "the carbazolyl-functional polysiloxane."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-3, 7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (US 6,544,670 B1) in view of Mimura et al. (Photoelectric properties of organic polysilane containing carbazolyl side groups), Surprenant (US 4,461,867), and Morita (US 5,310,843).

Regarding claims 1 and 2, Kitano et al. disclose a functional linear polysiloxane comprising units of 50-100% by mole of a hole transporting siloxane-arylamine (column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10,

Art Unit: 1794

lines 33-35, general formula 22). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 36-67). However the reference does not explicitly disclose units of instant formula (I)-(III).

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Surprenant teaches units of instant formula (II) as part of a polysiloxane composition (abstract). The reference teaches units of instant formula (II) are adhesion promoting and are generally added by up to 15% by weight of the polysiloxane polymer (column 6, lines 41-44), which would necessarily overlap with the claimed range.

Morita teaches units of instant formula (III) (the middle unit of general formula) as part of a polysiloxane composition (abstract). The unit of instant formula (III) is disclosed in general in column 2, lines 24-31, and specifically in column 7, line 65 with an R^1 of methyl, an R^4 is $-\text{CH}_2\text{CHR}^3-\text{SiR}^1_n\text{Z}_{3-n}$ where R^3 is hydrogen, Z is methoxy, and

Art Unit: 1794

n is 0. The reference also discloses a silicone composition comprising a functional polysiloxane resin, a condensation catalyst (column 3, line 54 to column 4, line 2), and an organic solvent (column 5, line 63 to column 6, line 1). The reference also teaches polysiloxanes comprising units of instant formulae (III) form good organic resin coatings, and promote adhesion (column 6, lines 18-20)

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (II) and (III) as taught by Surprenant and Morita to the polymer of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to the suitable given both references teach polysiloxane compositions. One of ordinary skill in the art would be motivated by a desire to promote adhesion and form good organic resin coatings.

Regarding claim 3, modified Kitano et al. disclose all the limitations as set forth above. Additionally the reference discloses that the polysiloxane may also comprise units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22). Given that the reference discloses units of instant formula (I) of 50-100 mol % and units of instant formula (III) of 21 mol % (Morita column 7, line 65). Units of instant formula (II) and $R^1_2SiO_{2/2}$ would together necessarily comprise 29 mol % or less. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382

Art Unit: 1794

(Fed. Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37

(CCPA 1990); In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Regarding claim 7, Kitano et al. disclose a silicone composition comprising a functional linear polysiloxane comprising units of a 50-100% by mole of a hole transporting siloxane-arylamine (column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 63-67). The reference also discloses the composition as a solution (column 27, lines 17-19) dissolved in an organic solvent (column 30, lines 58-59). However the reference does not explicitly disclose units of instant formula (I)-(III).

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Surprenant teaches units of instant formula (II) as part of a polysiloxane composition (abstract). The reference teaches units of instant formula (II) are adhesion promoting and are generally added by up to 15% by weight of the polysiloxane polymer (column 6, lines 41-44), which would necessarily overlap with the claimed range.

Morita teaches units of instant formula (III) (the middle unit of general formula) as part of a polysiloxane composition (abstract). The unit of instant formula (III) is disclosed in general in column 2, lines 24-31, and specifically in column 7, line 65 with an R^1 of methyl, an R^4 is $-\text{CH}_2\text{CHR}^3-\text{SiR}^1_n\text{Z}_{3-n}$ where R^3 is hydrogen, Z is methoxy, and n is 0. The reference also discloses a silicone composition comprising a functional polysiloxane resin, a condensation catalyst (column 3, line 54 to column 4, line 2), and an organic solvent (column 5, line 63 to column 6, line 1). The reference also teaches polysiloxanes comprising units of instant formulae (III) form good organic resin coatings, and promote adhesion (column 6, lines 18-20)

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (II) and (III) as taught by Surprenant and Morita to the silicone composition of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to the suitable given both references teach polysiloxane compositions. One of ordinary skill in the art would be motivated by a desire to promote adhesion and form good organic resin coatings.

Regarding claims 9 and 10, Kitano et al. disclose an organic light-emitting diode comprising, a substrate having a first opposing surface and a second opposing surface (column 27, lines 3-5); a first electrode layer overlying the first opposing surface

Art Unit: 1794

(column 22 lines 62-65; column 27, lines 1-5); a light-emitting element overlying the first electrode layer (column 23, lines 8-9), the light emitting element comprising a hole-transport layer and an electron-transport layer (column 23, lines 15-22). The light-emitting layer which lies on the hole transport layer will intrinsically also function as an electron-transport layer and can be thought of as a light-emitting and electron transporting layer in the two layer device of Kitano et al. The reference also discloses a functional polysiloxane as part of the hole transporting layer (column 23, lines 15-22). Kitano et al. teach a siloxane polymer for use as a hole transporting polymer in an electroluminescent device (abstract). The reference also discloses a functional linear polysiloxane comprising units of a 50-100% by mole of a hole transporting siloxane-arylamine column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22) as a solution (column 27, lines 17-19) dissolved in an organic solvent (column 30, lines 58-59). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 63-67). However the reference does not explicitly disclose units of instant formula (I)-(III) or that the polysiloxane composition is cured.

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that

Art Unit: 1794

Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Surprenant teaches units of instant formula (II) as part of a polysiloxane composition (abstract). The reference teaches units of instant formula (II) are adhesion promoting and are generally added by up to 15% by weight of the polysiloxane polymer (column 6, lines 41-44), which would necessarily overlap with the claimed range.

Morita teaches units of instant formula (III) (the middle unit of general formula) as part of a polysiloxane composition (abstract). The unit of instant formula (III) is disclosed in general in column 2, lines 24-31, and specifically in column 7, line 65 with an R^1 of methyl, an R^4 is $-\text{CH}_2\text{CHR}^3-\text{SiR}^1_n\text{Z}_{3-n}$ where R^3 is hydrogen, Z is methoxy, and n is 0. The reference also discloses a silicone composition comprising a functional polysiloxane resin, a condensation catalyst (column 3, line 54 to column 4, line 2), and an organic solvent (column 5, line 63 to column 6, line 1). The reference also teaches polysiloxanes comprising units of instant formulae (III) form good organic resin coatings, and promote adhesion (column 6, lines 18-20)

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (II) and (III) as taught by Surprenant and Morita to the polymer of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to the suitable given both references teach polysiloxane

Art Unit: 1794

compositions. One of ordinary skill in the art would be motivated by a desire to promote adhesion and form good organic resin coatings.

Surprenant teaches polysiloxane compositions are curable (abstract).

It would be obvious to one of ordinary skill in the art at the time of the invention to cure the polysiloxane of modified Kitano et al. as taught by Surprenant. One of ordinary skill in the art would reasonably expect the composition of modified Kitano et al. to be suitable for curing given that Surprenant teaches polysiloxane compositions are curable. One of ordinary skill in the art would be motivated by a desire to form a good film with strong adhesion.

Regarding claim 11, modified Kitano et al. disclose all the claim limitations as set forth above. Additionally the reference discloses the polysiloxane resin as part of the light-emitting layer in a single layer device (column 23, lines 5-12), and in the hole transport layer in a two layer device (column 23, lines 15-22). However the reference does not explicitly disclose the polysiloxane resin in the electron transporting light-emitting layer.

It would be obvious to one of ordinary skill in the art at the time of the invention to include the polysiloxane resin in the electron transporting light-emitting layer given that Kitano et al. teach the polymer as suitable for a light-emitting layer which must also function as electron transporting (column 23, lines 5-12). One of ordinary skill would be motivated by a desire to make the electron transporting light-emitting layer more hole transporting.

Art Unit: 1794

7. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (US 2003/0211358 A1) in view of Mimura et al. (Photoelectric properties of organic polysilane containing carbazolyl side groups) and Ogawa et al. (US 5,247,115).

Regarding claims 4 and 5, Kitano et al. disclose a functional linear polysiloxane comprising units of 50-100% by mole of a hole transporting siloxane-arylamine (column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 63-67). However the reference does not explicitly disclose units of instant formula (I) and (IV).

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Ogawa et al. teach units of instant formula (IV) as part of a polysiloxane composition (column 1, lines 54-65). The reference teaches units of instant formula (IV)

Art Unit: 1794

easily undergo nucleophilic substitution (column 1, lines 28-31), and teaches a polymer composition with 38 mol % units of instant formula (IV) (column 4, lines 54-55).

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (IV) as taught by Ogawa et al. to the polymer of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to the suitable given both references teach polysiloxane compositions. One of ordinary skill in the art would be motivated by the desire to have units which easily undergo nucleophilic substitution (column 1, lines 28-31).

Regarding claim 6, modified Kitano et al. disclose all the limitations as set forth above. Additionally the reference discloses that the polysiloxane may also comprise units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22). Given that the reference discloses units of instant formula (I) of 50-100 mol % and units of instant formula (IV) of 38 mol % (Ogawa et al. column 4, lines 54-55). Units of $R^1_2SiO_{2/2}$ would therefore comprise 12 mol % or less. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Regarding claims 7 and 8, Kitano et al. disclose a silicone composition comprising a functional linear polysiloxane comprising units of a 50-100% by mole of a

Art Unit: 1794

hole transporting siloxane-arylamine (column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 63-67). The reference also discloses the composition as a solution (column 27, lines 17-19) dissolved in an organic solvent (column 30, lines 58-59). However the reference does not explicitly disclose units of instant formula (I) and (IV).

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Ogawa et al. teach units of instant formula (IV) as part of a polysiloxane composition (column 1, lines 54-65). The reference teaches units of instant formula (IV) easily undergo nucleophilic substitution (column 1, lines 28-31), and teaches a polymer composition with 38 mol % units of instant formula (IV) (column 4, lines 54-55). The

Art Unit: 1794

reference also teaches units of instant formula (IV) wherein p is 2 and q is 1 (column 1, lines 54-65).

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (IV) as taught by Ogawa et al. to the silicone composition of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to the suitable given both references teach polysiloxane compositions. One of ordinary skill in the art would be motivated by the desire to have units which easily undergo nucleophilic substitution (column 1, lines 28-31).

8. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. (US 2003/0211358 A1) in view of Mimura et al. (Photoelectric properties of organic polysilane containing carbazolyl side groups), Ogawa et al. (US 5,247,115), and Surprenant (US 4,461,867).

Regarding claims 9 and 10, Kitano et al. disclose an organic light-emitting diode comprising, a substrate having a first opposing surface and a second opposing surface (column 27, lines 3-5); a first electrode layer overlying the first opposing surface (column 22 lines 62-65; column 27, lines 1-5); a light-emitting element overlying the first electrode layer (column 23, lines 8-9), the light emitting element comprising a hole-transport layer and an electron-transport layer (column 23, lines 15-22). The light-emitting layer which lies on the hole transport layer will intrinsically also function as an electron-transport layer and can be thought of as a light-emitting and electron transporting layer in the two layer device of Kitano et al. The reference also discloses a

Art Unit: 1794

functional polysiloxane as part of the hole transporting layer (column 23, lines 15-22).

Kitano et al. teach a siloxane polymer for use as a hole transporting polymer in an electroluminescent device (abstract). The reference also discloses a functional linear polysiloxane comprising units of a 50-100% by mole of a hole transporting siloxane-arylamine (column 10, lines 40-45, general formula 1 column 2 lines 25), and units of $R^1_2SiO_{2/2}$ (column 10, lines 33-35, general formula 22) as a solution (column 27, lines 17-19) dissolved in an organic solvent (column 30, lines 58-59). The reference also discloses a carbazole-polysiloxane as a hole transporting polysiloxane (column 1, lines 63-67). However the reference does not explicitly disclose units of instant formula (I) and (IV) or that the polysiloxane composition is cured.

Mimura et al. teach organic polysilanes with carbazolyl side groups (abstract). The reference teaches polysilanes with propylcarbazolyl side chains have high hole mobility (are hole transporting) (page 2198, column 2, lines 2-7).

It would be obvious to one of ordinary skill in the art at the time of the invention to replace the arylamine of Kitano et al. with the propylcarbazole of Mimura et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kitano et al. disclose siloxanes with a carbazole side chain as examples of hole transporting siloxanes and Mimura et al. teach propylcarbazolyl side chains result in silanes with high hole mobility (page 2198, column 2, lines 2-7). One of ordinary skill would be motivated by the desire to produce a polysiloxane with hole transporting ability.

Art Unit: 1794

Ogawa et al. teach units of instant formula (IV) as part of a polysiloxane composition (column 1, lines 54-65). The reference teaches units of instant formula (IV) easily undergo nucleophilic substitution (column 1, lines 28-31), and teaches a polymer composition with 38 mol % units of instant formula (IV) (column 4, lines 54-55).

It would be obvious to one of ordinary skill in the art at the time of the invention to add the units of instant formulae (IV) as taught by Ogawa et al. to the polymer of modified Kitano et al. One of ordinary skill in the art would reasonably expect such a combination to be suitable given both references teach polysiloxane compositions. One of ordinary skill in the art would be motivated by the desire to have units which easily undergo nucleophilic substitution (column 1, lines 28-31).

Surprenant teaches polysiloxane compositions are curable (abstract).

It would be obvious to one of ordinary skill in the art at the time of the invention to cure the polysiloxane of modified Kitano et al. as taught by Surprenant. One of ordinary skill in the art would reasonably expect the composition of modified Kitano et al. to be suitable for curing given that Surprenant teaches polysiloxane compositions are curable. One of ordinary skill in the art would be motivated by a desire to form a good film with strong adhesion.

Regarding claim 11, modified Kitano et al. disclose all the claim limitations as set forth above. Additionally the reference discloses the polysiloxane resin as part of the light-emitting layer in a single layer device (column 23, lines 5-12), and in the hole transport layer in a two layer device (column 23, lines 14-22). However the reference

Art Unit: 1794

does not explicitly disclose the polysiloxane resin in the electron transporting light-emitting layer.

It would be obvious to one of ordinary skill in the art at the time of the invention to include the polysiloxane resin in the electron transporting light-emitting layer given that Kitano et al. teach the polymer as suitable for a light-emitting layer which must also function as electron transporting (column 23, lines 5-12). One of ordinary skill would be motivated by a desire to make the electron transporting light-emitting layer more hole transporting.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

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MHW

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